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Keywords: MOFs, transformation, 3D compound

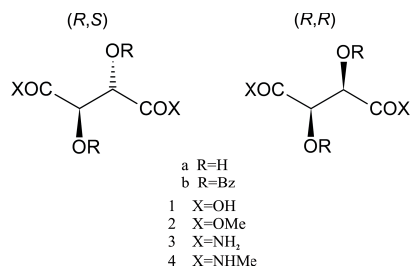
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The many facets of tartaric acid its diesters and diamides

Urszula Rychlewska, Agnieszka Plutecka, Dept. of Chemistry, Adam Mickiewicz University, Poznań (Poland). E-mail: urszular@amu.edu.pl

Versatile possible chemical modifications, a variety of stereochemical forms and a great hydrogen bond capacity make tartaric acid and its derivatives interesting objects for structural studies. We have investigated the crystal structures of several derivatives of (*R,S*)-tartaric acid (the so called *meso* tartaric acid) and performed comparative analysis with their *R,R* counterparts. The obtained results have been analyzed in terms of chirality, conformation, molecular and crystal symmetry and supramolecular synthon robustness. Among the factors that affect molecular conformation local dipolar CH/CO interactions, intramolecular hydrogen bonds and a tendency to situate hydroxyl groups in mutually *gauche* orientation have been considered. The role of hydroxyl substituents as symmetry breaking elements will be illustrated. A link between hydrogen-bond synthons, as identified by X-ray analysis, and grow synthons present in solution as a consequence of thermodynamically driven self-association equilibria will be addressed. In this respect, a particular attention will be paid on formation of polyamide supramolecular ladder motifs, which in condensed media are by far more important than the maintenance of the preferred molecular conformation.



Keywords: tartaric acid derivatives, H-bond synthons, symmetry breaking

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Crystal engineering in mercury (II) coordination compounds based on pyrazine carboxamide ligand

Alireza Azhdari Tehrani, Hamid Reza Khavasi, Department of Chemistry, Shahid Beheshti University, G. C., Evin, Tehran 1983963113, (Iran). E-mail: a_azhdari@sbu.ac.ir

Crystal engineering is a flourishing field of research in modern chemistry. Contemporary crystal engineering involves the design and synthesis of crystals. the aim of this endeavour is the development of new crystalline materials with a variety of properties, functions and applications.

Among the non-covalent motifs, Hydrogen bonding, metal-ligand coordination and pi-pi stacking have been employed as synthetic paradigm to rationally design superstructures.

Herein, we report crystal engineering of mercury (II) halides of N-Phenyl-2-pyrazine carboxamide, which are obtained of N-Phenyl-2-pyrazine carboxamide with mercury (II) chloride & Bromide.

In this regards, To explore the supramolecular trends exhibited by molecules that can engage simultaneously in metal-ligand coordination, hydrogen bonding, and pi-pi stacking interactions, N-Phenyl-2-pyrazine carboxamide was prepared and it's coordination chemistry and crystalline packing behavior was investigated. This ligand consists of three structural parts: (1) a pyrazine group that can coordinate to a metal, (2) a carboxamide group, which can have hydrogen bonding interactions through the amide nitrogen atom as well as via the carbonyl oxygen atom, and (3) a phenyl group, which can be involved in pi-pi stacking interactions.

In our design, the metal center assemble the ligand into the required geometrical orientation. From the packing Diagram of carboxamide ligand, it is clear that hydrogen bonding between amide moiety and (Ph)C-H and pi-pi stacking between pyrazine and Phenyl ring are the dominant factors. In [HgCl₂(L)], the molecule contains One Hg(II) with distorted tetrahedral geometry, two chlorine and a carbonyl oxygen and pyrazine nitrogen atom. For [HgBr₂(L)], the structure consists of two ligands and two Hg ions bonded to form dimeric complexes. Each metal is four coordinated and bonded to two halogen atoms, one pyrazine nitrogen atom, and one carbonyl oxygen atom from the second ligand. All two complexes have been expanded by Hydrogen Bonding and pi-pi stacking to supramolecular entities.

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Synthesis and crystal structure of Ho(phen)₂(NO₃)₃

Taraneh Hajiashrafi,^a Ali Nemati Kharat,^a Ali Reza Ghanbarpour,^b Hamid Reza Khavasi,^b ^aSchool of Chemistry, University College of Science, University of Tehran, Tehran. ^bDepartment of Chemistry, Shahid Beheshti University, G. C., Evin, Tehran 1983963113, (Iran). E-mail: t_ashrafi@khayam.ut.ac.ir

Rare earth metal cations are of growing importance for their